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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,505	02/27/2004	Jae-Yoel Kim	678-1362	9103

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EXAMINER
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ALIA, CURTIS A

ART UNIT	PAPER NUMBER
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2616

MAIL DATE	DELIVERY MODE
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01/25/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/789,505	<b>Applicant(s)</b> KIM ET AL.	
	<b>Examiner</b> Curtis Alia	<b>Art Unit</b> 2616	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 November 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 9-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>2 July 2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group III (claims 9-18) in the reply filed on 14 November 2007 is acknowledged.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 9, 12-14 and 17-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Kim et al. (US 6,882,636).

For claim 9, Kim discloses an apparatus for encoding physical layer header information (see column 1, lines 32-37, TFCI is an indicator field used in a dedicated physical data channel's data frame to inform a receiver of the data rate of the current service frame) comprising a bi-orthogonal sequence generator (see column 10, lines 45-57, bi-orthogonal sequence is generated by inverting orthogonal Walsh code sequences using a sequence of 1s) for generating a bi-orthogonal sequence by performing an AND operation between less significant bits of physical layer header information bits and predetermined Walsh code sequences (see column 11, lines 12-26, each multiplier multiplies each bit of the less significant bits a1-a5 with basis Walsh codes symbol by symbol to generate 5 encoded bits), a mask sequence generator for generating a mask

sequence by performing an AND operation between more significant bits of the physical layer header information bits and predetermined mask sequences (see column 11, lines 27-36, each multiplier multiplies each bit of the set of more significant bits a6-a9 with a basis mask sequence with basis mask sequences symbol by symbol), and an exclusive OR element for performing an exclusive OR operation on a symbol-by-symbol basis between the bi-orthogonal sequence output from the bi-orthogonal sequence generator, so as to output a single encoded symbol sequence (see column 11, lines 37-44, adder adds the encoded input information bits received from all of the multipliers to complete the generation of a single final code symbol).

Note: Kim teaches generating the bi-orthogonal sequences using the less significant bits and generating the mask sequences using the more significant bits of the input information bits; whereas the instant application claims that the bi-orthogonal sequences are generated using the more significant bits and the mask sequences are generated using the less significant bits.

Inverting the bit significance does not define a patentably distinct invention over that in the system of Kim. The inversion of the bit encoding operation presents no new or unexpected results, so long as the information bits are encoded using all of the prescribed steps claimed and the encoding is performed with success. Therefore, to have the bi-orthogonal sequence generated from the more significant bits and the mask sequence generated from the less significant bits, as opposed to the inverse, would have been routine experimentation and optimization in the absence of criticality.

For claim 12, Kim discloses that the bi-orthogonal sequence generator comprises a bit "1" generator for generating a sequence of 1s (see column 10, lines 45-53, a one-bit generator generates bits having 1s), a basis Walsh code generator for generating 5 basis Walsh code

sequences of length 32 (see column 10, lines 57-65, Walsh codes W1, W2, W4, W8 and W16 are all length 32) and a plurality of AND elements for receiving all 10 bits of the physical layer header information as their inputs (see figure 8, multipliers 840-845), performing respective AND operations between  $2^{\text{nd}}$ -6<sup>th</sup> less significant bits of the 10 bits and the 5 basis Walsh code sequences (see column 11, lines 12-26), and performing an AND operation between one bit of the 10 bits and the sequence of 1s (see column 11, lines 9-11).

For claim 13, Kim discloses that the mask sequence generator comprises a basis mask sequence generator for generating 4 basis mask sequences of length 32 (see column 11, lines 5-8), and a plurality of AND elements for receiving all 10 bits of the physical layer header information as their inputs (see figure 8, multipliers 846-849), and performing respective AND operations between 4 more significant bits of the 10 bits and the 4 basis mask sequences (see column 11, lines 27-36, multipliers multiply the basis mask sequences with their respective input bits).

Claim 14 is rejected as performing the method of the apparatus in claim 9.

Claim 17 is rejected as performing the method of the apparatus in claim 12.

Claim 18 is rejected as performing the method of the apparatus in claim 13.

#### ***Claim Rejections - 35 USC § 103***

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim.

For claim 10, Kim does not teach explicitly that the physical layer header information bits are 11 bits in length. However, Kim does explain that the TFCI can represent a great amount of information using a small number of bits, with the number of bits increasing with the increasing amount of information being stored (see column 3, lines 1-14). A 6-bit TFCI can represent 1 to 64 different information items, a 7-bit TFCI representing 1-128, 8-bit representing 1-256, 9-bit representing 1-512, and 10-bit representing 1-1024 different information items. Therefore it would have been obvious to increase the TFCI to 11 bits to support 1-2048 information items.

Claim 15 is rejected as being the method performed by the apparatus in claim 10.

8. Claims 11 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of IEEE 802.17 (cited item N on Notice of References Cited).

For claim 11, Kim discloses that the physical layer header information (TFCI field) bits include information of the frame's transfer rate (see column 1, lines 32-37). Kim does not explicitly teach that the transfer rate is of a MAC frame, or that the information of the payload length is disclosed. However, the MAC frame format in IEEE 802.17 defines a field in the MAC frame header indicating the length of the frame, which can be used to further determine the length of the payload using the payload type field (see Figure 1.1 and section 1.2.1). IEEE 802.17 further explains that the MAC frames according to the MAC protocol are transmitted and passed down to the physical layer (see section 1.1.1, paragraph 1). One of ordinary skill in the art would understand that protocols that are working along the same layer are interchangeable (such as replacing Frame Relay with ATM or UDP with TCP protocols in other layers). Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention that the same encoding method used for the TFCI can be used for MAC frames, and that since the MAC frame has the payload length stored within the header, it can also be added to the encoded portion of the physical layer header information, as well as other header information readily available. The encoding of MAC frame data is a more robust form of forward error correction than the standard PHY forward error correction and is capable of detecting and correcting more transmission errors, especially on a bursty network.

Claim 16 is rejected as being the method performed by the apparatus in claim 11.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis Alia whose telephone number is (571) 270-3116. The examiner can normally be reached on Monday through Friday, 8am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on (571) 272-7629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CAA



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